A case of mumps meningitis: A complication of vaccination?

In October 1986 a 14-year-old girl with no history of measles–mumps–rubella vaccination was given Trivirix vaccine (Institut Armand-Frappier, Montreal). She complained of a generalized headache 26 days later but did not respond to acetaminophen therapy. The next morning her headache persisted, and she had a temperature of 38.3°C, nausea, general malaise and photophobia. She had clinical signs of aseptic meningitis and was admitted for assessment to the Children's Hospital, Vancouver.

The patient had enlarged tonsils, mildly enlarged submandibular lymph nodes, slight nuchal rigidity and a temperature of 37.9°C. She had no history of frequent infections, allergies or severe illness.

The hemoglobin level was 129 g/L and the leukocyte count 10.2 × 10^9/L (75% neutrophils, 17% lymphocytes and 8% monocytes). The blood urea nitrogen, serum creatinine and serum electrolyte concentrations were within normal limits. Examination of the patient's cerebrospinal fluid revealed the following levels: glucose 3.3 mmol/L, protein 0.76 g/L and leukocyte count 224 × 10^6/L (67% lymphocytes, 20% neutrophils and 13% monocytes). Cultures of blood and cerebrospinal fluid yielded no bacteria. However, a hemadsorbing agent was isolated from the cerebrospinal fluid in primary monkey kidney cells 4 days after the patient's admission to hospital. The isolate was identified at the provincial laboratory as mumps virus by means of hemadsorption inhibition with specific antiserum. The virus was not isolated from throat swabs or stool samples.

Mumps meningitis was diagnosed. The patient gradually recovered, was afebrile within 4 days of admission and was discharged 6 days after the onset of symptoms.

A serum sample obtained 10 days after discharge was tested with the use of an enzyme-linked immunosorbent assay and found to contain specific mumps IgG and IgM antibodies.

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Comments

There was no known exposure to wild mumps virus at school or at home. The meningitis suggested an association with the Trivirix vaccination, even though the symptoms appeared 26 days later — somewhat longer than the incubation period for the wild virus. However, the vaccine package insert mentions that central nervous system (CNS) complications, although unusual, may occur within 30 days of vaccination and that a cause-and-effect relation has not been established.

M-M-R (Merck, Sharp and Dohme Canada, Kirkland, PQ), a trivalent vaccine that contained the Jeryl Lynn mumps strain, had been used in Canada until May 1986, when Trivirix was introduced. The latter contains three live attenuated strains of virus: Schwarz (measles), Urabe Am 9 (mumps) and RA 27/3 (rubella). The Urabe Am 9 strain, of Japanese origin, is highly attenuated and is produced in chicken embryonic fibroblasts. It appears to have properties comparable to those of the older Jeryl Lynn strain.[1]

To our knowledge there is no reliable in-vitro marker test to differentiate the mumps strain in Trivirix from the wild mumps virus. Therefore, to establish a causal relation between the Trivirix vaccine and the meningitis is difficult.

A clinical trial in Montreal failed to report any CNS complications.[2] However, the observation period was only 12 days. The case described here indicates that the incubation period may be longer and that an extended observation time is necessary to detect possible side effects.

In light of the possible correlation between the aseptic meningitis and a newly introduced vaccine, it is important for clinicians to observe and report any suspected side effects for further evaluation of this vaccine's safety.

References

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2. Lavergne B, Frappier-Davignon L, Quevillon M et al: Clinical trial of Trivirix for measles, mumps, and rubella immunization. *Can Dis Wkly Rep* 1986; 12: 85–88